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Speech of people with autism: Echolalia and echolalic speech

Abstract

Speech of people with autism is recognised as one of the basic diagnostic, therapeutic and theoretical problems. One of the most common symptoms of autism in children is echolalia, described here as being of different types and severity. This paper presents the results of studies into different levels of echolalia, both in normally developing children and in children diagnosed with autism, discusses the differences between simple echolalia and echolalic speech - which can be considered to be a characteristic symptom in children with autism - and the correlation between echolalic speech and other symptoms of autism. It introduces a view of autism as a communication disorder characterised by specific speech development patterns and specific ways of acquiring social communication skills.

Introduction

Speech of people with autism presents one of the basic problems of diagnostic and therapeutic approach and theoretical view of aetiology of this developmental disorder. As far as the speech development of children is concerned, the symptom which is most often regarded as characteristic of autism is echolalia, whose intensity and type is described in a variety of ways. In cases of autism we come across reports of no speech, delayed speech development, frequent mention of echolalic disorders, incorrect use of pronouns, e.g. total omission of a pronoun or substitution of 'I' (pronoun confusion), non-verbal communication disorders, anomalies in articulation and difficulty in initiating and holding a conversation (cf. Bleszynski, J. 1998, p. 44).

I would like to present here the results of the research into of the severity of the occurrence of this element in speech - a developmental stage, both in normally developing children and in children with various disorders, clusters of disorders and autism, broken down by degree of

severity, showing the differences between simple echolalia and echolalic speech - which can be regarded as a characteristic of speech in children with autism - and correlation of echolalic speech with other symptoms of autism. This may introduce a view of autism as a communication disorder as well as present specific speech development and the ability to acquire social communication skills.

1. Echolalia as an element of speech development occurring at the pre-linguistic stage

Echolalia is most often portrayed as a faithful repetition of words, phrases or longer utterances. It can have a developmental character, as well as be a symptom of pathology (I have presented this problem in more detail in my early publications, e. g. 1998, 2005). In the case of autism, it is listed as one of the symptoms of this developmental disorder. However, it is pointed out that echolalia can be one of the symptoms which:

- does not have to appear even in the full spectrum of autistic disorders (it is not a characteristic feature of autism) – for instance U. Frith (2008, p. 145) states that three quarters of children diagnosed with autism display echolalia, which points at its intensity, but not as a characteristic feature of autism;

- can appear at different ages (from the pre-linguistic stage of speech development)
  - as a stage in normal development of child's speech, which J. Piagent (2005) placed in the pre-linguistic stage – at the age of approximately 11 months (currently occurring earlier as a result of acceleration);
  - occurring at a later stage of speech development which demonstrates a delayed speech development, progressing at an individual rate, but with at least three months delay;
  - as a continuous or prolonged feature, however indicating the existence of speech development, which can take on characteristics of regression or inhibition of speech development at a certain stage (prolonged, protracted stage);

- it can be characterised by varying intensity, which can result from the individual's circumstances, i.e. takes the form of sporadic utterances or crowded speech (which can take on characteristics of repetition),

- it can also take on different character, e.g. of direct, delayed or functional echolalia – these types are described below (cf. Janklewicz, H., 1993; Pisula, E. 1993, 200; Winczura, B., 2008; Bleszynski, J., 1988 at al).

It is also important to differentiate according to the specificity of the uses of echolalia in children's speech, including in cases in autism, which were recorded in relation to the time of its occurrence and its use in an interpersonal communication.

a) direct echolalia – repetition occurs after hearing an utterance, described as direct repetition – which can take on characteristic of an act of communication, also occurs in additional situations such as:
- aiding the process of tasks performance (repetition during performance of a task – a form of tracing, with a concurrent verbal repetition, of the stages of the task);
- counteracting lack of concentration – reinforcement of performed actions by repetition;
- as an effect of inner speech, looking for associations, common semantic and communication field, etc.,

b) indirect echolalia, deferred (Jaklewicz, H., 1993 – delayed) – after some time all of the earlier heard content is repeated, eg. adverts, spoken words or music tunes;

c) mild echolalia (Roberts, J.M., 1989), or functional echolalia – the child is producing a large number of separate words, which are associated with particular situations or child's interests. If the child is able to use echolalia adequately and lead a simple dialog, it is regarded as a very significant success in communication.

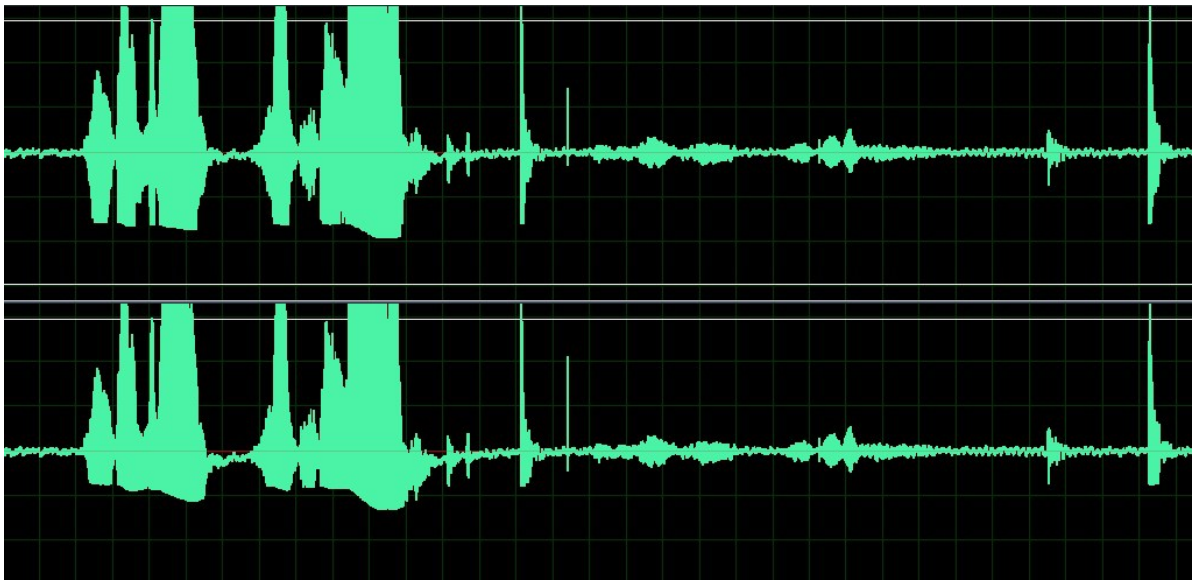
As I have demonstrated (Bleszynski, J., 1998), the specificity of the occurrence of echolalia and echolalic speech in children with autism refers to the suprasegmental component of the utterance. It was possible to base this conclusion on the research related to speech therapy work with autistic children. According to the theory presented by I. Lovaas and his wife, at a conference organised by a society assisting autistic people in Gdansk (Stowarzyszenie Pomocy Osobom Autystycznym w Gdansku), echolalia was used to trigger active speech and to improve communication of autistic children. Such approaches introduced, in an essential way, cognitive dissonance in the research into specific elements occurring in the speech of children and adults with autism.

2. Echolalia and echolalic speech

It is possible to revise the current approach to the limited possibilities of communication for people with autism. It was necessary to conduct a factual analysis of the severity and specifics of the occurrence of echolalic utterances in children diagnosed with autism.

In view of the specific echolalic utterances of people with autism a graphical analysis of the articulation was conducted. Only this approach can categorically demonstrate the differences between simple echolalia and echolalic utterance. It does not only refer to the pitch and voice intensity but also to the order and individual presentation of the individual utterance.

Graph 1. The therapist's utterance and echolalic speech of an autistic child – *"Jak się masz?"* ("How are you?").



[j a k s' e m a š j a k s' e m a š]

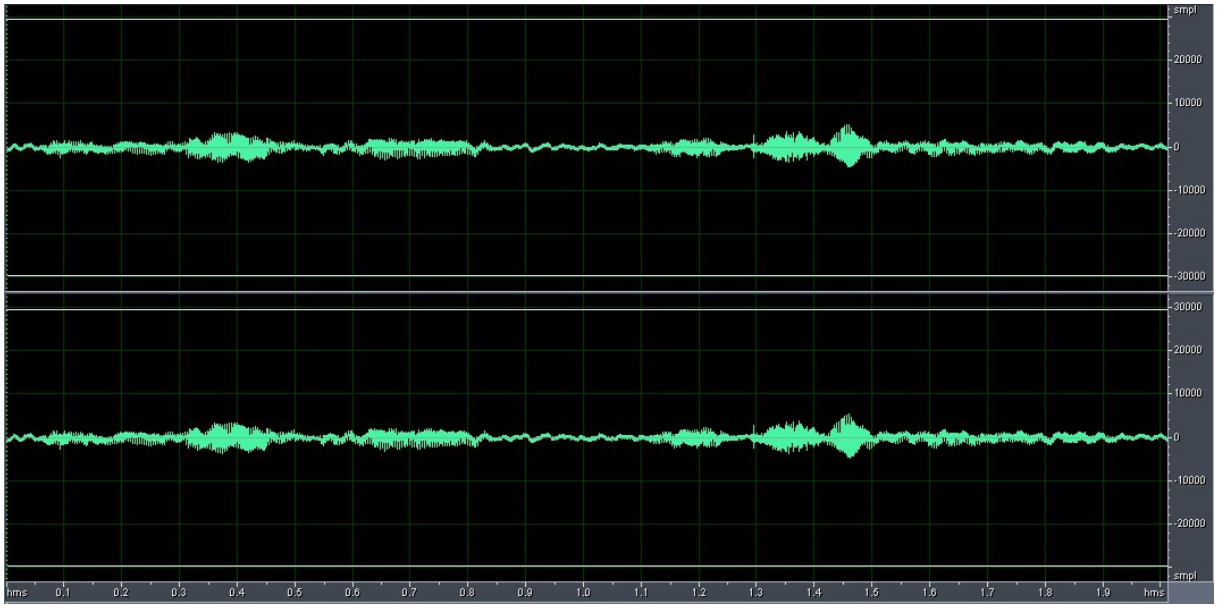
Therapist Child

The graph clearly shows the differences in the two utterances. They refer to the information conveyed by the suprasegmental elements, such as intonation, volume and stress. It is worth noting that the child's utterance does not end in rising intonation of a question – it is transformed into a statement. This is a correct way of conducting a conversation by

responding to a question with a statement. It is less common to reply to question with a question, unless when seeking clarification.

Another utterance – also belonging to the same category, relates to a common question "What is your name?"

Graph 2. The therapist's utterance and echolalic speech of an autistic child – " Jak masz na imię?" (How are you?).



[j a k m a š na i m' ę jak ma š na i m'ę]

Therapist child

Also, in this case what is most noticeable is the shift in time of the phrases uttered by the therapist and the child and the nasal quality of sound. A change in the dynamics between the utterances of the therapist and the child can be noticed, which significantly demonstrates individualisation of the echolalic utterance. It is not the case of direct echolalia, which would present itself, just like echo, as a faithful, although delayed repetition. In this utterance not only references the therapist are apparent, but also to the current functioning state of the autistic child.

This differentiation allows us to concentrate the attention on the influence of the autistic child on the utterance – a communication, which is not a passive, or learned utterance (often

children with autism are taught to concentrate their attention and repetition is regarded as a confirmation that they have listen to a command). It can be concluded that a differentiation between a segmental and suprasegmental level in the utterance directed at the child and in the response we are getting is a repetition of the sentence with a changed suprasemental form, unrelated to the content - but what is important – with a changed meaning.

Understanding of the intentionality of such action of a child becomes an issue.

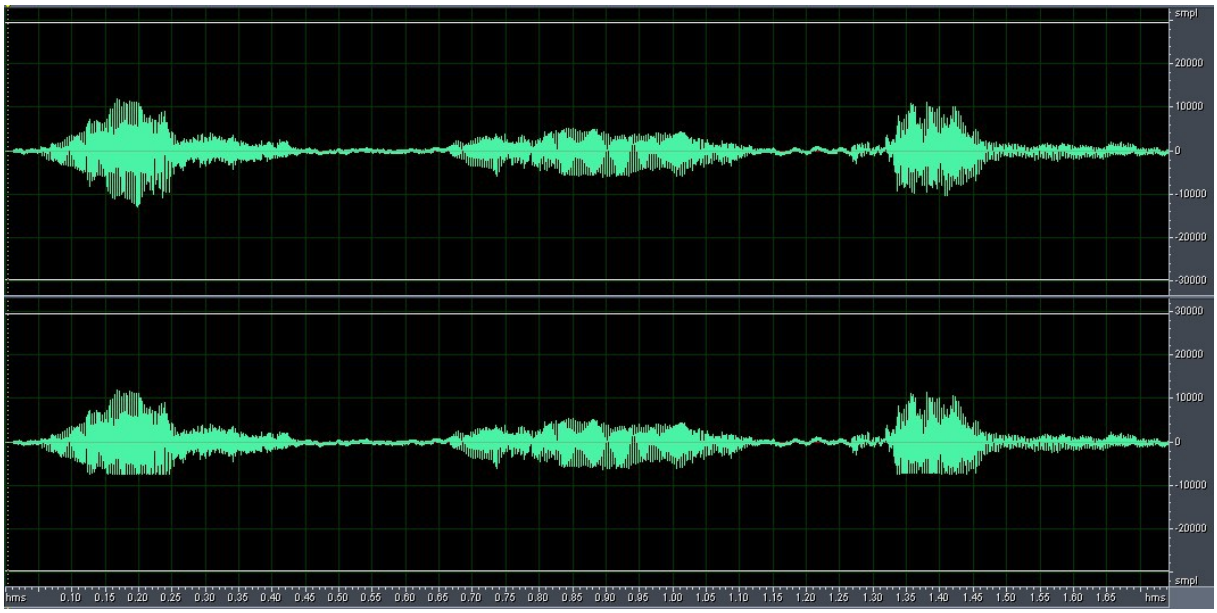
Is it:

- a form of play – i.e. producing sounds, which is not indicated by the ability to recapitulate
- a form of learned reaction – as a stimulus (question) and reaction (answer), which can result from observation of the social functioning of people in the immediate surroundings
- calibration – lack of ability to give answers[1], which can signal subordination, compliance
- Creation of a specific language, system of communication – through lack of manipulation within the text with a transfer to form

The next graph demonstrates the complex phenomenon of changes taking place in the utterance. However, significantly, the graph shows a broadening of the utterance by the time stratification elements of the communication itself. The picture of a child seemingly playing with words is presented here, and thus shows a very important characteristic of phonological awareness.

Graph 3. The therapist's utterance and echolalic speech of a child with autism – "Co robisz?" ("What are you doing?").

[1] In the English language it is possible to use inversion, which refers simultaneously to the question and provides an answer.



[c o ro b i š c o r o b’ i š]

Therapist Child

It is important to state here that children with autism do not demonstrate distortions in the sphere of phonematic or phonological hearing. Also, articulation competence and formulated transmission of the echolalic utterance show that autism is not connected with disorders of perception, re-working and repetition of verbal communication.

3. Echolalic speech and consciousness

Among many theories related to aetiology, severity of specific disorders and progression of autism, especially in children, it is necessary to refer to the theories of the aetiology of autism in connection to the occurrence of echolalic speech. Although we do not come across theories directly linking, or demonstrating the essential nature of echolalic speech in autism (this can be explained by the occurrence of echolalic speech only in two thirds of people with autism), the problem of influence - co-occurrence - of the effect of echolalic speech in autism in relation to the theoretical premises is demonstrated. The fundamental theories include those dealing with the development of self consciousness, as discussed by R. F. Baumeister (2004), depicting the three essential functions of “I”: reflective consciousness, interpersonal affiliation and executive for “ego” – leading to self regulation, initiative, alternative explanation and influencing motivation and behaviour. As observed by the author, our behaviour is corrected by ***I –*** Y***ou, inter-subjective model of R.P. Hobson*** (1993), which assumes that already in the

neonatal brain two information processes separate. 1. I – You, as a process of understanding people, 2. I – It, as a process of understanding things.

It is assumed that these processes combine in an early stage of development and that the fusion taking place in the subsequent stage of child's development is a prerequisite facilitating continuation of acquisition of abilities according to the theory of mind and the use of abstract concepts in language. In the case of children with autism, disorders of the development occur at level of information I – You (Hobson, R.P., 1993). This results in the children not being able to develop abilities to use the information mechanism I – You and I –It, which then results in the lack of ability to carry out the process of intersubjective socialisation (to conduct an analysis of own situation in the context of surrounding social and material reality), to apply the theory of mind to other people, to correctly develop language, social abilities or symbol recognition.

In relation to the neurophysiological processes of social development Hobson's theory assumes that a distorted process of inter-subjectivisation can also take place in the subcortical structures responsible for mind-body coordination or cortical and subcortical structures, assuming that this mechanism of pathology is mediated by the subcortical communication structure – manifested in delayed speech development and occurrence of echolalic speech. This could explain some of the causes of the weakening of social bonds in autism, however this model does not apply to autistic children who develop correct relationships with their mothers[2] (Rogers, S.J., Ozonoff, S., Maslin-Cole, C., 1993). This model refers to a group of children with autism, who possess higher functional abilities, e.g. display normal development as far as the theory of mind is concerned (Baron-Cohen, S., 1995), which is a necessary condition for acquisition of abilities in the sphere of the information system I – You, I – It. It is worth noting that, as pointed out by V. Lewis and J. Boucher (1988), R.P. Hobson's subgroup of autistic children, as an experimental group, displayed significantly higher level of skills when playing symbolic games than the level specified by the creator of the concept.
A different theory is proposed by S. Baron-Cohen, the steps of cognitive mechanism describes four innate patterns of brain function, forming the basis of normal development of social cognition.

[2] These bonds indicate undistorted process I –you

- Intentionality Detector (ID) – gestures which are consciously noted and then interpreted in the basic, intentional (volitional) mental states - determine goals, desires and needs.

- Eye-Direction Detector (EDD) – which allows for recognition of situations stimulated by sight, assessment of the preferred direction of the eye stimuli, which allows to conclude that the eyes are directed at the perceived object recognised by other senses.

- Shared-Attention Mechanism (SAM) – responsible for building the triadic representations surrounding each person, consisting of:

- **I,** as self recognition,
- **I plus –** another person/other people,
- **I plus – other,** additional object (other),

- Theory-of-Mind-Mechanism (ToMM), which integrates the earlier mechanisms (ID, EDD, SAM) with the theory of cognition of the mechanism of mind function and especially relates to such processes as, for example, deceiving, thinking, guessing, and supposing.

According to S. Baron-Cohen (1995, p.56) in case of children up to the age of nine months it is possible to observe a sequential development in the scope of intentional cognition (ID) and eye direction (EDD), and from nine to eighteen months we can observe shaping of the mechanism for dividing attention (SAM), and from eighteen to forty eight months overall development of all of the described cognitive structures, according to the Theory of Mind Mechanism (ToMM)[3].

Other, neurophysiological approaches are presented by L. Waterhouse, D. Fein, and C. Modahla in the multifactorial model, where autistic disorders are related to one of four mechanisms, which can coexist with one another, causing impairments of varying severity and course, and can be related to 1. Canalesthesia – where abnormal hippocampus functions are displayed, which is responsible for storing and accessing sensory experiences, this leads to

[3] L. Bobkiewicz-Lewartowska (2000) and B Winczura (2008) have described the theory of mind in wider terms, referring in detail to the deficiencies in abilities to imagine the state of mind of other people (e.g. conviction, desire, intention) which form the basis of the theory of mind.

disruptions in the integration of information; 2. limited ability 3. decoding of non-verbal communication, where abnormal functions of the amygdala disrupt socialisation - asociality (impaired vasopressin and oxytocin) leading to flattening of social bonding and sense of belonging; 4. limited development of social awareness, where abnormal cortical organisation leads to the disappearance of the process of representation of ability to attention shift.

According to the premise of the multi-factorial model, within its four mechanisms, we are looking for the factors allowing for the explanation of the weakening of the process of shaping of information, acquiring of ability to mimic social behaviour, including communication, which occur in autism. Individual differences in the diagnosis of autism (often described as subtypes of autism) while explaining the causes of the delays in development can confirm the accuracy of the presented model (Waterhouse, L., Fein, D., et al, 1996). However, abnormal function of the cerebellum can affect the appearance of the deficits in the information process overall.

This model does not fully explain autism. One of the weak points of this model is the explanation of the role of the cerebellum. If it is not conclusively responsible for the occurrence of autistic disorders, then the whole multi-factorial model is undermined. The four-factorial model refers to two neurobiological subtypes of autism (Waterhouse, L., 1994; Waterhouse, L., Fein, D., at al., 1996), which points at individual character of this disorder and may indicate the influence of other factors, both neurobiological and genetic. Another problem is the localisation of social behaviour modules in the cerebral cortex, which could offer an alternative concept of neuroanatomical and neurochemical recognition system of autism (e.g. in the frontal lobe or cortical connections).

Similar approach is presented by **S. Ozonoff** in the theory of **deficits in executive functions**. It was noted that disturbed expression of selected deficits in executive functions occurs in people with autism. Frontal lobes are presented as mediators between executive functions, a result of behaviour being controlled by selective, active planning and patterns extending to executive memory. According to this concept we can refer to neurophysiological basis of perceptual and motor integration, which according to the premise of A. Łuria block III (cf. Bogdanowicz, M., 1997, pp. 31-39), is responsible for the complex forms of mental activity including long-term memory.

S. Ozonoff argued that children with damaged frontal lobe, without any autistic disorders, should behave similarly to autistic children, which results from the fact that they are unable to understand other people's point of view which leads to the lack of proper empathy (Gratan, L. M., Eslinger, P. J., 1992). Such disorder can demonstrate a weakening of these functions and manifests itself in the delayed social development. S. Ozonoff (1995) assigned to autistic people the following social dysfunctions: distorted perception of emotions, mimicry, creation of false appearances (pretending), intersubjectivity, joint attention, and theory of mind as a weakening of executive functions.

Although, Ozonoff and others (Ozonoff, S., 1995; Ozonoff, S., at all, 1991; Ozonoff S., at al 1994) presented arguments to prove their theory, it lacks neurological or neuroanatomical basis. The research shows discreet anatomical damage or dysfunctions of the frontal lobes of people with autism[4], as well as, additionally, in the limbic system and the temporal lobe, which co-occur with the temporal lobe dysfunctions.

This model seems to be credible. However, it needs to be analysed in the context of the occurring / co-occurring dysfunctions of cerebellum and temporal lobes. It is essential to verify this concept looking at a wider population of autistic people, as well as analyse the impact of when the first symptoms of autism appear on the development of individual cognitive and social functions.

S. P. Springer and G. Deutsch (2004) have introduced the concept of the **cerebral hemisphere asymmetry**, which presents the latest findings of cognitive research in neurobiology in the context of functional human behaviour. Concentrating on autism they refer to the research of D. Fein at al., (1994) into handedness of autistic children. It showed that 52% of children lacked uniform lateralization or were left-handed. Similarly, the research into the auditory lateralization, conducted by G. Dawson et al. (1982), demonstrated that either left ear is preferred or no laterization is established. Thus it can be concluded that autistic disorders result in an increase in activity of the right cerebral hemisphere, which confirms the cause of disorders residing in the sphere of communication, as well as abilities of these children.

[4] N.J.Minshew and S.M. Dombrowski (1994) demonstrate through the research work with five autistic children of pre-school age, that during the course of the experiment the children showed dysfunctions of the frontal lobe suggesting a delay in the period of maturing of the front part of the brain.

Using the PET technique, T. Schifter at al. (1994), shows that in 13 people with autism decreased activity which occurred in the association areas. This demonstrated impaired neuron migration within the brain structure. In other studies the authors found that impairments in the brain activity in these people also occur in the temporal - parietal area. Despite the impairments in both cerebral hemispheres, J. M. Mountz et al. (1995), points out that more significant changes can be observed in the left cerebral hemisphere.

The presented studies do not provide an unequivocal answer to the aetiology, or a clear clinical picture of the disorder based on the theory of cognitive neurobiology. It seems advisable to approach autistic disorders in a broader aspect of the impairments of brain structures, where one of the factors may result from immaturity or abnormal progress of brain structures maturation or brain disorder - a symptom or effect of which may be irregularities in the formation of lateralization.

Summary

When analysing communication of people with autism, with a particular focus on children between 2 -5 years of age, undoubtedly because of the increased prevalence of echolalic speech in them (two thirds of the diagnosed cases), it is important to make a broader analysis of this form of communication.

Undoubtedly it displays, in the case of people with autism, symptoms of delayed speech development (taking on the characteristics of a delay, inhibition and regression of the already achieved phase of speech development), however, it is characterized by a specific, individualized information transfer, modified at a suprasegmental level and with preserved segmental level. It seems all the more important to acknowledge conscious and intentional action taken by a person with autism, which deny the randomness and lack of deliberate action - or rather are characterized by the desire to establish and maintain communication. This statement points at the departure from the claims that people with autism do not have the ability, capacity, or awareness of communication needs.

A different perspective on consciousness and identity of a person with autism also becomes a consequence of this approach, including the reference to frequent substitution of the pronoun

"I" by other forms (inflection, names, etc.). Autism is not a disorder preventing the development of wider social skills - it is a disorder limiting perception, and thus the development of cognitive skills and response to signals from the environment. According to various theories, from psychoanalytic, through interactive, brain structure and neurophysiological, and functional; to the most prominent emerging issue is the problem of grasping, processing and utilising the acquired knowledge and skills. These processes take a different course to the commonly occurring developmental stages (both at the level of perception, and parallel re-processing and consequently utilisation). This important point, though seemingly obvious, has its representation in the echolalic speech - which reveals the preservation of model of perception skills (often in accordance with the theory of C. H. Delacato (1995) differentiated according to the receptor, severity, and the type of reception).

Echolalic speech creates possibilities:

- assessments of the level of person's development - to determine the level of language skills and severity of autistic disorders,
- identifying possible aetiology of autism, thus concentrating on the most probable factor (probable factors) underlying this disorder,
- presentation of the prognostic course of shaping of the communication skills, as well as social skills, based on the assumption that communication will facilitate the development of other skills)
- Identifying the programme of the undertaken actions to improve and shape skills - individual therapy program.

Attempts at following in the footsteps of a child with autism (the Kaufmans' Option Method) or using echolalia in therapy as an expression of attempts to search for and stricter the contacts in a broader perspective, seem, especially in the case of children with mild learning difficulties, within norm and above, the most appropriate and effective - which was documented by studies into delegation methods in oligophrenopedagogy .

Therefore, it seems that the appropriate presentation of the problem of echolalic speech and its use in the diagnostic and therapeutic processes, can assist in the creation of the optimum actions for acquiring and shaping of contact with autistic

children and children with other developmental disorders (often described as autism-like) as well as children developing normally.

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